Freeform Search

Database: US Pre-Grant Publication Full-Text Database
US Patents Full-Text Database
US OCR Full-Text Database
EPO Abstracts Database
JPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Term: L17 and (subscriber near database)

Display: 50 **Documents in Display Format:** - **Starting with Number** 1

Generate: ○ **Hit List** ◉ **Hit Count** ○ **Side by Side** ○ **Image**

Search Clear Interrupt

Search History

DATE: Tuesday, September 14, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L18	L17 and (subscriber near database)	29	L18
L17	L15 and (mailbox)	77	L17
L16	L15 and (mailbox near routing)	0	L16
L15	L13 and (subscriber near message$)	132	L15
L14	L13 and (subcriber near message$)	0	L14
L13	L12 and (synchroniz$ or updat$)	890	L13
L12	L11 and (voice near messag$)	1923	L12
L11	telephon$ near messag$	6656	L11
L10	L9 and synchroniz$	13	L10
L9	(thomas near black) and (jean near corrielus)	104	L9
L8	L7 and (internal near email)	0	L8
L7	L6 and email	28	L7
L6	(jean near corrielus) and updat$	504	L6
L5	L4 and email	7	L5
L4	(jean near corrielus) and synchroniz$	378	L4
L3	L1 and (voice near message)	4	L3

Freeform Search

L2	L1 and (voice near mail)	4	L2
L1	mailbox near routing	17	L1

END OF SEARCH HISTORY

L18: Entry 18 of 29 File: USPT May 15, 2001

DOCUMENT-IDENTIFIER: US 6233318 B1
TITLE: System for accessing multimedia mailboxes and messages over the internet and via telephone

Abstract Text (1):
A unified messaging system that provides a multimedia mailbox. The system allows a subscriber to access stored multimedia messages, such as voicemail messages, facsimile messages, combined voice and facsimile messages and video messages, not only through a public switched telephone network using a telephone but also over a data network, such as the Internet or an intranet, using a personal computer. The system provides voicemail access over the telephone network, indicating message number, etc. with the ability to play messages to the telephone user as desired. For text type messages, such as facsimile and e-mail, the system converts the text into speech and plays the speech to the telephone user. The system allows a personal computer user to obtain the data network access using an Internet browser. The browser is used to access a home page of the system and get information about the messages stored, and is used to download (get) and play the messages at the personal computer via data streaming in the case of a voice or video messages or view the messages in the case of text type messages, such as facsimile and e-mail. The user can also perform the other typical messaging functions over the data network connection that are provided for telephone access, such as viewing a message list, saving and deleting messages, group list administration and other administration tasks.

Brief Summary Text (5):
The present invention is directed to a system for accessing stored messages over a network and, more particularly, is directed to a system for providing unified access to stored messages, such as multimedia mail messages, in a unified multimedia mailbox through multiple access pathways such as over a telephone network using a telephone and over the Internet using a browser.

Brief Summary Text (7):
Communication systems currently exist that allow different types of messages, such as voice mail messages and facsimile messages, to be stored for later retrieval by a subscriber to such systems. These types of systems are described in U.S. Pat. Nos. 5,029,199; 5,193,110; 5,260,990; 5,263,080; 5,475,748; 5,493,607; 5,524,139; 5,519,766 and 5,008,926, all incorporated by reference herein. These systems allow a caller or sender to leave a message, such as a voice mail message, for a subscriber whenever the subscriber is not available. When a voice mail message is to be retrieved the subscriber typically connects with the system over a conventional telephone line via a telephone call and plays the message by using the touchtones produced by the telephone to control playback, as well as other functions. In these systems the access by the subscriber is typically only through a telephone line connection. Today, there is a need to allow access to such systems through other means such as the Internet or Intranet.

Brief Summary Text (8):
Several different types of messaging systems, such as voice mail and e-mail, are also available to users. Users of the variety of today's messaging systems typically have to use several different systems and/or terminals to get their

messages. A typical business user may have several voice mailboxes, several e-mail mailboxes, and perhaps some mailbox-like facsimile services. Each of these mailboxes requires separate operations and different types of terminals (DTMF telephone for voice mail, personal computer (PC) for e-mail access, facsimile machine/PC for facsimile messages). The mailboxes have different names (addresses) and cannot usually interwork. Notification mechanisms are either non-existent, or tied to one of the mailboxes. What is needed is a mailbox system that integrates all of these message types and access methods.

Brief Summary Text (11):
It is an additional object of the present invention to provide a system that unifies message storage allowing different types of messages or electronic communications such as voicemail, facsimile, e-mail and video mail to be stored on a single system in a single unified multimedia mailbox, and accessed via different pathways, such as via a telephone network or the Internet/Intranet.

Brief Summary Text (17):
It is an object of the present invention to provide a standards based system that will support mailbox access to a multimedia mailbox using conventional web browser software.

Brief Summary Text (19):
It is a further object of the present invention to provide message waiting/urgent notifiers when new or urgent messages are deposited in the mailbox or the message status changes by a simultaneous different connection into the mailbox such as when a mailbox is accessed by computer and while the computer is logged into the mailbox an access via a telephone interface deletes a message.

Brief Summary Text (20):
The above objects can be attained by a system that allows a subscriber to access stored messages, such as voicemail messages, facsimile messages, e-mail messages and video messages, that are stored in a unified multimedia mailbox not only through a public switched telephone network using a telephone but also over a data network, such as the Internet or an intranet. The system provides voicemail access over the telephone network, indicating message number, etc. with the ability to play messages to the telephone user. For text type messages, such as facsimile and e-mail, the system converts the text into speech and plays the speech to the telephone user. The system allows a personal computer user to obtain the data network access using an Internet browser. The browser is used to access information about the messages stored and is used to download and play the messages via data streaming in the case of a voice or video messages or view the messages in the case of text type messages, such as facsimile and e-mail. The user can also perform the other typical messaging functions over the data network connection that are provided for telephone access, such as saving and deleting messages, group list administration and other administration tasks.

Detailed Description Text (2):
The present invention provides an integrated multimedia mailbox and unified messaging. The term "mailbox" is used to mean an entity visible to the subscriber. This is the entity the subscriber logs into and appears to operate on when the subscriber performs mail-related operations. This subscriber-visible entity may not correspond directly with a single implementation entity, but may exist only through the cooperation of several distinct messaging systems, each with its own message storage capability. To avoid confusion, the term "mailbox" is used to mean only the subscriber visible entity, and, where necessary, the term "message endpoint" is used to denote the implementation entity or entities which underlie the integrated mailbox.

Detailed Description Text (3):
Integrated mailboxes have certain desirable and preferable characteristics. A fully

integrated mailbox, in accordance with the present invention, includes the following major capabilities that are not present in a single-media mailbox:

Detailed Description Text (4):
a. The ability to deal with messages of different data/information types, or having multiple parts (multimedia mailbox).

Detailed Description Text (7):
d. The ability to access the mailbox through a variety of commonly-available mailbox access terminals (PC, DTMF phone, etc.), without special equipment, and with, as far as practicable, logically the same capabilities for all terminal types

Detailed Description Text (9):
f. The ability to receive and send messages to subscribers of existing messaging systems, using a variety of widely-implemented messaging protocols.

Detailed Description Text (10):
Note that there are degrees of integration in today's single-media mailboxes, both with respect of allowed message types and the access terminal types which can be used. For instance, integrated facsimile/voice mailboxes are common today, and e-mail can be used to transfer non-text information. Similarly, e-mail mailboxes cannot be accessed using telephones, and voice/facsimile mailboxes cannot be accessed using a PC.

Detailed Description Text (11):
Although it is possible to have a mailbox which is integrated with respect to multiple message types but which can only be accessed through a single type of terminal (e.g., e-mail systems using MIME), a fully integrated mailbox is preferably accessible from several types of terminals and pathways, to maximize the subscriber's ability to access his messages in various circumstances. The following terminal types are provided by the present invention: a. Conventional DTMF telephone handset; and b. Personal Computer (PC).

Detailed Description Text (13):
It should be emphasized that an integrated mailbox subscriber using the present invention is able to dynamically change the terminal used, from session to session.

Detailed Description Text (14):
The integrated messaging system (IMS) of the present invention is preferably interfaced to external systems. This allows the subscriber to exchange messages with external subscribers and can be used to integrate several existing messaging accounts on different systems so that the user accesses a single (virtual) integrated mailbox. The following types of external systems can be included:

Detailed Description Text (18):
d. CPE voicemail systems and other foreign network-based voicemail systems (e.g., the subscriber's cellular phone voice mailbox).

Detailed Description Text (20):
The integration of the mailbox can be real or virtual. "Real" mailbox integration means that the messages of all types are located in a single messaging system (MS), and that subscriber and administrative control facilities for messages and mailbox configuration parameters are provided at a single user interface point and do not involve cooperation or interaction with any other MS. "Virtual" integrated mailboxes provide the same subscriber-visible functionality, and appear the same to the subscriber as a real integrated mailbox. However, in the virtual integrated mailbox, the subscriber's messages are stored in at least two different MSs, whose configuration can be (but need not be) performed separately. The different

messaging systems cooperate to provide the complete functionality. The term "associated MS" is used to denote an MS that is in a special relationship with another MS for the purposes of synthesizing a virtual IMS, and the term "external MS" is used to denote an MS which is not so closely associated, but which still has an interface to the IMS.

Detailed Description Text (21):
The distinction between real and virtual integrated mailboxes is invisible to the subscriber. Real messaging systems can comprise multiple subsystems, such as the preferred distributed system described herein, with the "mailbox" spread across several pieces of hardware. Both types of integration need interfaces to external MSs, even if they are not part of a virtual IMS. The relationship between the MSs that are being integrated into a virtual IMS ("associated MSs") is much closer than that between MSs that just happen to interwork ("external MSs"). While an integrated mailbox system could be totally self-contained (allowing messaging only between its subscribers, like most voicemail systems today), it is preferable to be able to send and receive mail from other systems. Real mailbox integration is preferred and described in detail herein.

Detailed Description Text (23):
Desktop integration (DTI) is the emulation, as perceived by the subscriber, of an integrated mailbox, when a personal computer 60 (PC), as illustrated in FIG. 1, is used for message endpoint access, there are several non-integrated messaging systems (MS) such as e-mail system (EMS) 66 and voicemail (VMS) 68, and the integration of the mailbox may not occur for non-PC access terminals; in other words, special-purpose PC software "does" the integration of the mailboxes; the MSs need no ability to handle non-native data or communicate with each other. One approach to this integration is to use a conventional browser with a local home page that includes links to the various messaging systems. Another simple DTI approach is to use separate TCP/IP connections 62 and 64 to each MS 66 and 68 on a single dialup point-to-point protocol (PPP) connection to a router 70 providing hardware dedicated to routing IP packets over various physical hardware interfaces, as shown in FIG. 1.

Detailed Description Text (25):
In another approach to virtual mailbox integration, a front-end director 80, as illustrated in FIG. 2 directly interfaces with the customer, thus avoiding changes in any of the integrated MSs 66 and 68. The director 80 communicates on the back end with the separate MSs 66 and 68 that need to be integrated. Two major variants of this approach are possible: the director 80 simply passes requests through in real-time, and thus stores no messages itself; or, the MSs 66 and 68 forward messages to the director 80 when they are deposited, and the director 80 stores them until the subscriber logs in. In the latter case, the director 80 effectively becomes a full IMS with external MS interfaces.

Detailed Description Text (29):
The foregoing discussion indicates that the preferable approaches to an integrated multimedia mailbox with both DTMF and PC access are either a full, real IM system, or enhancement of a VMS so that it can provide pass-through real-time access to other messaging systems. As a result, there are two preferred system-level architectures: a. An enhanced VMS (i.e., the IMS) which provides all message storage and all user interfaces for all types of message. All other MSs interface to the IMS as external, non-integrated systems. b. An IMS which provides permanent storage for voice, video, text, e-mail and facsimile messages and exchanges other message types on demand with one or more closely associated systems such as an associated EMS (in addition to any interfaces to other external MSs). The IMS has all user interfaces and passes through user commands related to the associated EMS (s). The IMS exchanges deposit notifications with the associated EMS(s).

Detailed Description Text (30):

FIG. 4 illustrates the system/network architecture for either the real or virtual integrated mailbox and integrated message system (IMS). As illustrated, the system architecture 100 allows access by a telephone 102 through a public switched telephone network (PSTN) 104 to the integrated messaging system 106 either directly or through a modem 108. Access by a personal computer 109 can also be accomplished through the PSTN 104. Access by a personal computer 110 through the Internet 112 using a modem 114 is also provided. Note the associated e-mail system (EMS) 115 is shown to depict the architecture of a virtual system. The IMS 106 is also coupled to other systems 116, 118 and 120. The content of the IMS 106 will be discussed in detail with respect to FIG. 6.

Detailed Description Text (33):
All messages have certain information (the message envelope) that goes along with them, such as sender, date/time of deposit, length, etc. The information varies with message type and, to some degree, with the means by which the message was received. The envelope information is preferably stored with the message, carried along with the message if it is to delivered to an external system, and be presented to the subscriber. The IMS 106, as previously discussed, is able to present a single list or inventory, containing all messages of all types (sorted into types), to the subscriber when he logs into his mailbox, and provide the ability to select messages for retrieval. In addition, some of the message envelope information can be presented in the inventory. The amount of information presented in the inventory, and the format of presentation are determined largely by the human aspects of the access terminal; when the voice interface is used, the presentation is preferably limited to simple spoken message counts ("You have three new voice messages, one new facsimile message, and two new E-mail messages and one new video message. One voice message is urgent."), otherwise the subscriber may quickly get confused. For the same reason, complex inventory sorting, message selection or folder capabilities are preferably not provided through the voice interface, even though they can be if desired. However, a PC interface preferably shows much more information to the user without overloading the subscriber, and allows sophisticated operations such as organizing messages into folders.

Detailed Description Text (36):
A PC interface according to the present invention provides an inventory much like the message list of e-mail systems. Typically, it includes, for each message: type of message (voice, video, e-mail, facsimile), subject (if any), sender, time of deposit, size of message (bytes, pages, seconds, as appropriate), and status (new/read, urgent, replied to, forwarded, etc.).

Detailed Description Text (38):
Message headers preferably include important details from the message envelope for non-voice/facsimile messages. The envelope of messages received via e-mail can have a lot more detail than those of voice/facsimile messages, and are also in text format. These type envelope elements are parsed by the system 106, and spoken in the same way that sender mailbox number, date/time, urgency and other envelope elements are handled (i.e., by concatenating pre-recorded prompt fragments). Preferably, the envelope data is stored in the same way, regardless of message type, to output the non-voice/facsimile envelope in spoken format.

Detailed Description Text (39):
One problem area is in identifying the message sender to the subscriber. Ideally, the system should speak the sender's name, preferably in the sender's own voice. For messages received from a sender on the same system, the system can access the sender's name announcement (or speak the mailbox number if there is no name announcement). The same is true of messages from other systems connected through digital networking using the Digital Messaging Network Version II (DMN II).TM. system available from Boston Technology Inc. of Massachusetts. Digital Messaging Network Version II (DMN II).TM. conforms to the AMIS-D voice messaging protocol, which passes the name announcement of the sender along with the message, using

X.400 and a real time DMN II protocol to retrieve remote name announcements during message addressing between systems.

Detailed Description Text (40):
For non-voice messages received from other vendor's platforms (including X.400 and MIME/SMTP messages from the Internet), the sender address information is a character string, and there is no explicitly identified name announcement. Of course, an X.400 or MIME voice body part can be included with any message, and so the sending system can send a name announcement. However, the receiving system will not know it is the name announcement and just play it as part of the message body. An example of such an address is "bill@abc.com". The receiving system 106 parses this string and speaks in the same way as a mailbox number, character by character. Text-to-speech could also be used, but there are problems for today's text-to-speech technology in handling an infinite variety of strange words (such as "abc"). In any case, it is often clearer to spell out the address when spoken. A preferred solution is to use the prompt voice fragment approach with additional prompt fragments for common address elements, to output (for example) the voice prompts "b" "i" "l" "l" "at" "a" "b" "c" "dot" "com" for the address noted above. This does not require text-to-speech capability.

Detailed Description Text (41):
The need to handle messages from the external MSs 116-120 means that some voice messages will be received in encodings other than the native format of the platform. Examples would be MIME messages containing audio/wav body parts, or .WAV files. The present invention can output this data to the telephone line just as easily as the native format using the freeware software package SOX. An alternative is to convert everything to the native format, but this can cause quality loss if the data subsequently needs to be converted to some other format for output over some other interface and is not preferred.

Detailed Description Text (42):
For output to a conventional telephone, non-voice messages of the text data type are converted to voice, or otherwise represented by voice. However, there are some structures (such as the MIME multipart/parallel) that may be too complicated, or not useful, or impractical to output to a voice telephone. In such a situation, the system should indicate to the subscriber the type of the message and other envelope information, and explain that it cannot be retrieved from a DTMF telephone using a standard voice message.

Detailed Description Text (45):
The limitations of the DTMF keypad do restrict the ability to address the message to non-numeric addresses. In the present invention, however, a group address containing non-numeric addresses (defined using the PC interface) can be specified through the DTMF interface. The present invention also allows a reply with a voice message to any received message from any sending address. The system 106 records the voice and deposits it in the local sender's mailbox, or converts it to an appropriate MIME, AMIS-D or X.400 body part using DMN II or the functions of a client e-mail reader such as MSExchange, cc:Mail or Netscape, Internet Mail, and sends it to the original message sender's address, if external.

Detailed Description Text (47):
Forwarding is the copying of a message and the deposit of the copy in a different mailbox, or transmission to a third party. Forwarding of non-voice messages is provided by the present invention through both the voice interface and the PC interface because when the message does not need to be converted to voice, such as for facsimile messages, the message can be sent either to another mailbox, or to a subscriber-entered facsimile telephone number, without actually retrieving the message. This approach is also used by the present invention for other data types (video), as is the turnaround of lines for alternate facsimile/voice use. When the destination is not the same IMS the message is format converted as needed.

Forwarding to another mailbox on the same IMS is implemented in the same way as for voice and facsimile, and operates independently of data type. Forwarding to a telephone number, when done automatically by the system, is considered a form of message deposit notification. The same mechanisms are used for forwarding, so we address it below.

Detailed Description Text (49):
For PC access, two physical interface types are provided: dialup to the IMS telephone ports, and via the Internet (or another TCP/IP network). In addition, several ways to handle voice messages are provided: purely digital, where the voice data is simply transferred like any other type of data (such as by using a browser as previously discussed), and the PC turns it into audio; the use of a voice/data line-sharing scheme, such as provided with the VoiceView system available from Radish (the latter would only be available through the IMS dial-up ports) and transfer of the voice data via an e-mail attachment with the conversion to audio occurring in the PC.

Detailed Description Text (56):
c. The IMS HTTP server 146 sends the home page in the response to the GET, and the PC's browser 144 displays it. The home page has welcome text and/or graphics and/or voice announcement, including a password entry field. For users wishing to leave a message for the subscriber instead of logging in, there is preferably a "button" on the subscriber's home page to "leave a message." The calling line identifier (CLI) can be used to verify that the calling number matches the subscriber name, or for using the authentication capabilities of HTTP. A secure socket layer (SSL) is used to provide an initial secure connection for authentication. A menu of additional services besides integrated messaging can also be provided.

Detailed Description Text (57):
d. Using the browser 144, the subscriber enters the password in the login information form, the browser 144 sends it to the HTTP server 146. The server 146 validates the password and synthesizes the subscriber's main messaging page ("http://www.mail.somerboc.com/JoeQuser/inbox") from the contents of the subscriber's message store, and returns the page to the browser 144. The subscriber's messaging page contains links to each of his stored messages ("http://www.mail.somerboc.com/awscripts/btv.dll?REFRESH) and whatever inventory information ("http://www.mail.somerboc.com/awscripts/btv.dll?DRTR&Unique MsgId) is desired for display, plus buttons for sending, deleting, forwarding or other message actions.

Detailed Description Text (60):
In the present invention, an HTTP server is provided in each application processing unit (APU) 150 (see FIG. 6) that is configured to handle data calls. In addition, an HTTP server (IPU 146) is provided for subscribers accessing the IMS 132 via an ISP 146 and the Internet 136. For small numbers of concurrent PC sessions, the MIU previously mentioned, with modem banks, can also be used to provide PC dial-up access. Note that all HTTP servers are configured identically, and use the distributed subscriber database access mechanisms (in the same way as a voice application) to locate and retrieve subscriber data and messages, even when they are not on the same APU. The HTTP servers use the existing platform operating system TCP/IP and PPP protocol capabilities.

Detailed Description Text (64):
The present invention, using Access NP.TM., provides comprehensive notification delivery capabilities including: paging via outdial, TAP and TNPP; message waiting indication (MWI), via SMDI, and using various SS7 or ISDN capabilities; special delivery outdial (delivery of voice and facsimile messages by outdialing the subscriber at a specified telephone number); and cellular short messages, containing mailbox message counts or callback numbers.

Detailed Description Text (68):
An associated e-mail system (EMS) will preferably have one of SMTP/MIME and POP protocol capabilities (or equivalent X.400 capabilities). The EMS can initiate SMTP sessions, but the VMS must initiate POP sessions. The EMS is configured to automatically create a copy of each message deposited, or an additional message with inventory information, give the message a special VMS recipient address, and send it via SMTP to the VMS (IMS 106). This has desired asynchronous notification characteristics. The VMS (IMS 106) receives the message, parses it (or merely notices it), and uses the information to control the notification mechanisms (but not store it). Alternatively and less preferably, the VMS (IMS 106) uses POP to poll the subscriber's message inventory. This is a periodic event, likely to cause a lot of traffic, since it needs to be fairly frequent and there could be large numbers of subscribers. In either situation, the VMS (IMS 106) needs to be provided with the subscriber's e-mail address and password.

Detailed Description Text (75):
For a virtual integrated messaging system (IMS), some of the systems outside of the VMS 68 need special treatment, so that the message endpoints of the MS (for example, e-mail system 66) appear to be part of the same integrated mailbox as the VMS message endpoint. Interfaces and operation for the "pass-through director" approach to virtual IMSs will be discussed in more detail (notifications have been addressed above already). As for notifications, an EMS with SMTP and POP capabilities, connected as shown in FIG. 3, is assumed.

Detailed Description Text (90):
The multimedia message store 132 is distributed across all the APUs 150, with most of a subscriber's messages being stored on a "home" APU. Standard methods are used by applications in any subsystem to access the distributed message store in a location-independent way.

Detailed Description Text (97):
The personal computer 142 is a typical conventional multimedia personal computer capable of running or executing an Internet browser 144, such as the preferred Netscape 3.0 browser available from Netscape Communications or Internet Explorer 3.0 available from Microsoft, and capable of connecting to an Internet service provider 140. The PC 142 can also, of course, be connected to the Internet through a company local area network (LAN) via a high speed connection. The computer 142 preferably includes a modem with a speed of at least 14.4 Kbps and preferably at least 28.8 Kbps when the user intends to access video images. The computer 142 also includes a conventional sound card and associated audio speaker and audio software such as the preferred TrueSpeech available from the DSP Group. For the recording of voice messages that will be transmitted to other mailboxes the computer 142 needs a microphone half duplex recording board such as SoundBlaster from Creative, Inc. and software such as MediaPlayer from Microsoft. For displaying still images, such as facsimile mail, the computer 142 needs to include a tiff reader such as Microsoft Facsimile available from Microsoft Corp. These still image components can also be used to record facsimile messages for transmission to other mail boxes. For the playing of motion video images, the computer 142 uses ActiveMovie from Microsoft. If video images for broadcast are to be recorded the computer 142 needs a conventional camera and associated software such as Connectix from Connectix, Inc.

Detailed Description Text (100):
During a typical session a user will access the platform 132 over the Internet 136 using a standard web browser to obtain a service provider home page where the user will log into the Internet service provided by the platform 132. During this process the user is required to enter a mailbox identifier and a pass code which are checked to ensure that the user is authorized. Once authorization is confirmed a service session is initiated and the user is presented a page that includes a menu of service options such as viewing a message list, administering mail box options, other network service features, etc.

Detailed Description Text (101):
When the user's e-mail is stored and supported by another platform the message list can include a cross notification of the existence of an e-mail message in the mailbox message list.

Detailed Description Text (102):
During a typical message retrieval function, the unit 146 accesses a master control unit 148 over an internal dual channel ethernet 149 to locate the storage location of the various types of messages stored for a subscriber and generates a web page which is transmitted to the personal computer 142 and which includes a list of the messages. The user selects a message in a conventional fashion by double clicking on a message descriptor or selecting the message and clicking on an appropriate icon such as "Play" in the display of the browser 144. The unit 146 responds by obtaining the selected message from the application processing unit 150 that stores the message, converting the message into the proper format and transmitting it. In the case of voice messages the voice data is converted from the encoding for storage into a file in the encoding for playing used by a conventional audio application executable by the browser 144 such as the preferred ActiveMovie from Microsoft and streamed to the browser 144 where it is played as it is received. For facsimile and other text messages a tiff file is created and transmitted to the browser 144. For video messages the video data, if necessary, is converted into the avi, mpg, mpeg, cu, etc. file formats that allow the data to be streamed to the browser and displayed in a pop-up window in real-time as it arrives. That is, video as well as audio messages are played or displayed as received by the computer 142. During play back the user can perform the conventional functions of rewinding, pausing, fast-forwarding, skipping, etc. The user can also perform operations associated with saving the message, deleting it or forwarding it to others. The processes performed by the Internet processing unit 146 as well as those performed by the master control unit 148 and application processing units 50 and other units 52, will be discussed in more detail later and are set forth in the source code appendix which code can be stored on/in various types of media, such as various types of disks and various type of computer memories, in the platform 132.

Detailed Description Text (105):
The refresh operation steps, with the data, accessed, are depicted in FIG. 7. The refresh operation is integral to the display update operation of the invention because each of the web pages that are transmitted to the computer 42 is affixed with an expiration date, such as yesterday, that causes the browser 144 to request a reload of the page each time the page is accessed or additional information is requested. This results in the message list being updated to include messages that have arrived since the current session started. The refresh operation is also used to provide web pages that the user has selected during browsing where the refreshed page has never been transmitted. The refresh operation starts with a refresh request (a "GET" with a URI) being sent 1 to the Internet processing unit 146. The IIS routine 170 denies access if the authentication for the request is not present. If the authentication is present the request is passed 2 to the security filter routine 172. The security filter 172 sends 3 the request to the support 174 for authentication by the platform 132. The routine 174 checks 4 the session information data 175 to see if a "session key" currently exists for the request and if so the flow skips to step 9 discussed below. If the session key does not exist the authentication request is sent to UNIX support routine 176 of the MCU 148 and/or APU 150 for authentication. The authentication involves accessing 6 the user authentication data 178 and returning 7 an indicator of success or failure at the authentication task. The authentication successful result is returned 8 to the security filter 172 otherwise processing proceeds to step 21 where a message concerning the authentication failure is returned to and displayed by the browser 144. The security filter 172 transfers 9 control to the validation routine 180 where account and file systems permission validation is performed and which returns 10 the result of validation. If validation is not successful, control transfers to

step 21 where a failure message is sent to the browser 144. If the validation is successful control transfers 11 and 12 through the Microsoft Internet Information Server (IIS) routine 170 to the template update routine 182. Routine 182 transfers 13 the control to routine 174 to access 14 and check the state of the session cache 175. Once this check is completed a request 15 for an update of the message/group information is presented to the routine 176. The routine 176 obtains 16 the mailbox list information or group list information 177 stored in the MCU 148 and returns 17 the information to the unit 146 where the session cache is updated. The updated data is forwarded 18 to the HTML template update routine 182 where the current template from the template file 84 is instantiated 19 to match the data in the session cache 175. The data of the template is passed 20 to the IIS routine 170 where the HTML template for the page is returned 21 to the browser 144 which displays the refreshed page to the user. The templates preferably use the Microsoft.htx file syntax and the templates include standardized variables for the various data, such as <%AccountNumber%>, <%From%>, <%Media%>, <%Length%>, etc.

Detailed Description Text (109):
The processing of a message retrieve or play request (DRTR/RMSG), like the refresh request, starts with the transmission of a request 1 by the browser 144 to the unit 146 as depicted in FIG. 10. The request can be made by double clicking on a message in the list of FIG. 8. The request is processed in the same way as the refresh request for steps 2-10. In step 11 the name of the requested file which has been made using a coded name may also be converted to the real file name, which is a security issue which will be discussed in more detail later. The file request is passed 12 to the gateway routine 182. The routine 182 passes the request for the file to the support routine 174 which obtains 14 a unique identifier from the session information 175. The request is then provided 15 to the application processing unit 150. The processing unit 150 accesses 16 the list of messages 177 and obtains 16.5 the message data is 186 (voice, text, video, etc.) from storage. The message data passed to the support routine 174 and is converted from the native storage format (from Oki 24 when the message is a voice message) into and stored 18.5 in cache or temporary storage 188. The cache storage allows later requests for the same message to be processed without again decompressing the data. As the data is temporarily stored it is retrieved as needed to perform a real-time conversion into streaming mode data and into the desired format, such as TrueSpeech. This conversion will convert voice data into data compatible with Netscape type "plug-in" play back systems that include TrueSpeech, Voxware, Real Audio and WAV (which is standard for Windows 95/NT). If the data is text data it can be converted into a tiff file compatible with a conventional tiff viewer. A facsimile message is typically stored in a tiff file. If the data is video data it is converted into MediaPlayer data (an avi file) compatible with the MediaPlayer system available from Microsoft. The data can also be converted into JPEG or MPEG for still and motion video players available for conventional browsers. The real-time streamed data, which includes the content type, is sent 18 to the IIS routine 170 and immediately forwarded 19 on to the browser 144 with an option to store the data in the cache local to the unit 146. When streamed the browser 144 does not know the content type of the message until the message is received from the server 146 and the invention relies on the default mode of the plug-in that handles the data type. At the browser 144 the transmitted data, if it is Voxware data, causes a window to open and it is immediately played or displayed as the case may be. Other types of data such as RealAudio require that a play button in a pop-up window be activated.

Detailed Description Text (111):
During a record process, a media player, delivered with a conventional operating system such as windows 95/NT, records the message or the subscriber activates a plug-in of the browser 144 to record the message (voice, video, text, etc.). Using the application, the subscriber edits, rerecords, etc. the message until satisfied. When finished the user provides a file name to the recording and stores it locally. The browser 144 is then used to POST the message to the server. Alternatively, the browser 144 can be used to request that the server 146 record the message and send

it. The server responds by performing the steps 1-21 for refreshing a page previously discussed and forwards a template for a page, such as depicted in FIG. 11. The subscriber completes the template by providing the file name of the recording, addresses (such as telephone numbers, e-mail addresses, etc.) of the recipient along with indicators for privacy, etc. The browser 144 when the "submit message" button is pressed creates a message header, attaches the file and sends the file to the server 146. The server 146, when the file appears in the incoming message directory, converts the message into an appropriate storage format (compresses it if necessary) and stores the message. The header is reviewed to ascertain the recipient addresses and the message is retrieved and sent to the recipients. For example, a voice message to a particular telephone number would result in an outdial process being performed. If the recipient is a subscriber the message is copied to the recipients mailbox.

Detailed Description Text (122):
The present invention, using the administration features, can be configured through the network interface to perform operations such as sending standard text or voice messages to doctor's patients.

Detailed Description Text (123):
The administration of mailbox features, such as the password, telephone ring count, etc., is performed using HTML templates that can be customized for each service provider.

Detailed Description Text (124):
The present invention provides priority of access to a mailbox by one of the owners to accesses that are made through the telephone interface.

Detailed Description Text (125):
The browser 144, if it automatically requests a refresh of a currently displayed page, allows a page to be created that includes a message list icon that can be updated to reflect that a new message has arrived during the session.

Detailed Description Text (127):
The administration features of the system allows a verified system administrator to access a system administration home page showing variables such as alarms, number of users logged in, etc., and to perform functions such as releasing an access block on a subscriber mailbox.

Detailed Description Paragraph Table (1):
QUIT Exits out or logoff of the system and delete all session information. DELE Removes one or more messages from the system. SAVE Saves a message. DRTR/RMSG Retrieves data such as an audio message. RECORD Sets and starts record/send process. REFRESH Gathers data and instantiates to browser in HTML. USE Selects a specific template. GRTR Retrieves particular group list data. GDEL Deletes a group list. GINS Adds a single entry to group list GUSE Get group and use template. GPUT Modify current group lists. GNEW Make new list. MBOXADM Administer user mailbox features such as change the password.

Other Reference Publication (6):
"Integrated Mailbox Approach", Boston Technology, Inc., Nov. 8, 1995, G. Weare and J. Schlueter.

Other Reference Publication (8):
VocalTec Press Release--"Vocaltec Introduces Internet Voice Mail 3.0 Integrated Voice Messaging For Electronic Mail", Jan. 31, 1997.

CLAIMS:

1. A message storage system, comprising:

a single multimedia mailbox for each subscriber storing voice messages and text messages intermingled;

a voice interface providing access to the messages via a telephone; and

a network interface providing access to the messages over a network via a personal computer with message identifiers of the messages including a session number and a randomly assigned identifier and the message identifiers assigned to a file name sent to a browser.

2. A message storage and retrieval system, comprising:

a telephone;

a telephone network coupled to said telephone;

a computer including a digital network browser;

a digital network coupled to the computer; and

a distributed architecture message system coupled to said telephone network and said digital network, said message system comprising:

a digital switch coupled to said telephone network;

a control unit storing addresses of multimedia messages of a single mailbox for each subscriber including voice, text, and video messages, and controlling switching of said digital switch;

a processing unit coupled to said digital switch, storing and retrieving the multimedia messages, and outputting the voice and text messages to said telephone as audio over said telephone network responsive to telephone commands;

a local network coupled to said control unit and said processing unit; and

a network unit coupled to the digital network and said local network including a data conversion cache, providing a home page with a message list including message identifiers comprising a session number and a randomly assigned file identifier responsive to a home page request by the browser, retrieving the messages from the processing unit and streaming the messages to the computer responsive to browser message play requests to the home page having an expired expiration date, the computer playing an audio of the voice messages in real-time as the voice messages are received, displaying an image of the text messages in real-time as the video messages are received, and displaying images of video messages in real-time as the video messages are received, and said computer recording a message and forwarding a message to said network unit for storage in said processing unit.

Previous Doc Next Doc Go to Doc#

L18: Entry 19 of 29 File: USPT May 15, 2001

DOCUMENT-IDENTIFIER: US 6233315 B1
TITLE: Methods and apparatus for increasing the utility and interoperability of peripheral devices in communications systems

Brief Summary Text (4):
In telephone systems, electronic switches are used to route calls to their destination, e.g., as designated by a destination telephone number. They are also used to connect telephone service subscribers to various peripheral devices, such as, e.g., voice messaging systems (also sometimes referred to as voice mail systems), speech recognizers, voice dialing services, etc. Peripheral devices are usually provided with some degree of intelligence, e.g., logic in the form of a CPU, so that the subscriber and peripheral device can communicate in an interactive fashion and/or to enable the peripheral device to interact with the switch in a meaningful way. Peripheral devices with such built in intelligence are frequently referred to as intelligent peripherals or "IPs".

Brief Summary Text (5):
FIG. 1 illustrates a known telephone system 100 which supports voice mail services. The known system 100 includes first and second telephone networks 10, 11 coupled together by a fiber optic connection 32. Each of the telephone networks 10, 11 includes a plurality of telephones 12, 14, a central office (C.O.) switch 16 and first and second voice mail IPs 28, 30. As illustrated the switch 16 includes first and second interfaces 18, 24, a central processing unit (CPU) 20, memory 22 and digit receiver 26. As discussed below, the C.O. switch 16 is capable of connecting a telephone to a voice mail IP 28, 30 or one of the other telephones 12, 14. The central office switch 16 is coupled to each voice mail IP 28, 30 by a Ti link and a simplified message desk interface (SMDI) connection. The voice mail IPs 28, 30 can indicate to the central office switch 16 that a message is waiting for a particular subscriber and that the subscriber's message waiting light should be activated in the event that the particular subscriber's telephone 12, 14 includes message waiting light functionality.

Brief Summary Text (13):
For the most part, subscribers to voice mail services usually want to be connected to a voice mail service when there is a new message waiting for them and not at other times. Accordingly, automatically coupling a subscriber to an IP which provides voice mail services in response to every off-hook condition of a subscriber can result in an inefficient use of switch and IP resources. This is because, in many if not most cases, the subscriber will be initiating the off-hook condition to place a call as opposed to connect to the voice messaging IP.

Brief Summary Text (15):
Accordingly, if a telephone customer subscribes to multiple telephone messaging services, e.g., one for work and one for personal use, using known techniques he may only be able to be automatically connected to one of the services upon detection of an off-hook condition. This may force, for example, a person trying to retrieve business voice mail messages to dial a telephone number corresponding to a work voice mail service when at home and the home voice mail service when at work to check for messages.

Brief Summary Text (16):
Additional complications may arise in the known systems when, for example, when a subscriber to a voice messaging service also subscribes to a voice dialing service implemented on a different IP than the voice messaging service. In such a case, connecting a caller automatically to the voice dialing service IP in response to an off-hook condition may be preferable to connecting the caller to the voice messaging IP since the subscriber will, in many cases, place calls more frequently than check for messages. Unfortunately, automatically connecting the subscriber to one IP will normally preclude automatic connection to the other IP thereby preventing a subscriber from automatically having access to services provided on multiple IPs.

Brief Summary Text (25):
As discussed above, it is desirable that a subscriber be able to obtain messages from the subscriber's voice mail services regardless of which IP the messages reside upon without requiring the subscriber to dial a telephone number corresponding to the voice mail IP. However, at the same time, it is desirable from a telephone system efficiency standpoint that the subscriber not be automatically connected to a voice mail IP in response to every off-hook condition but rather when new messages are waiting for the subscriber.

Detailed Description Text (16):
As illustrated, the database 310 comprises a plurality of entries. One set of entries, represented by a horizontal row, is associated with each subscriber being serviced by the control IP 232. Each set of entries includes information pertinent to servicing one subscription which, in most cases, will correspond to a single individual subscriber. However, in the case of a multi-party mailbox, the single subscription may correspond to multiple individuals.

Detailed Description Text (17):
In the FIG. 3B embodiment, columns 1-9 represent different information entries which are maintained in the database 310 for each subscription. Column 1, corresponds to subscriber name information, column 2 corresponds to a subscriber ID number. The subscriber ID number may be, e.g., a number used to identify the subscriber for voice mail purposes. Column 3 corresponds to subscriber telephone number information. The telephone number information may be used, e.g., to identify to the C.O. switch 216, the line on which the NFA protocol is to be enabled/disabled. In addition, in the case where the SMDI link provides message waiting information associated with a subscriber's telephone number, the control IP 232 can identify the particular subscriber for which a message is waiting by using the received telephone number and the telephone number information stored in the database 310.

Detailed Description Text (24):
Database column 7 indicates the type of message prompt to be played to the subscriber once a connection is established between the subscriber and the control is. In the case where no message is waiting, a message that there are no waiting messages is played to the subscriber in the event that the subscriber connects to the control IP, e.g. by dialing the IP. Accordingly, in column 7, "NONE" is indicated with regard to the prompt that should be used for subscribers without waiting messages. In the case where a voice message is waiting for an individual subscriber to an individual voice mail service, default message is played to the subscriber upon connection to the IP. The default message may be something like "You have at least one new message." In at least one embodiment the default message provides a user with the actual number of new waiting messages. In the case where the voice mail service being provided corresponds to a multi-party account, as in the case of the last account listed in database 310, a prompt identifying the individual for whom the waiting message is intended may be played when such information is available. For example, in one embodiment the prompt which is played states: "NEW MESSAGE FOR: NAME" where NAME is the name of the individual to whom

the waiting message is directed. When individual name information is not available regarding the intended recipient of a waiting message the default message prompt may be used.

Detailed Description Text (43):
In one such embodiment, CPU 412 of the speech recognizer array detects the service code associated with a particular call connection and assigns one of the speech recognizer circuits 408, 406, 404 to service the call as a function of the service code. In the event that another service code is received during the same call connection, the CPU will re-assess the speech recognition circuit assignment in response to receipt of the new service code. Thus, as a result of receipt of a new service code, the speech recognizer assigned to service a call may be dynamically changed during the call. For example, if a voice dialing service code is initially received, the combined speaker independent and speaker dependent speech recognition circuit 408 would be assigned to service the call. If during the call a voice message service code were received, the CPU 412 would de-assign the combined speech recognizer and assign the small vocabulary speaker independent speech recognition to servicing the call.

Detailed Description Text (49):
In step 508 the subscriber for which the message is intended is identified. This is accomplished by, e.g., using either a telephone number or subscriber ID received from the SMDI line in conjunction with a message waiting signal, with the corresponding subscriber information stored in the database 310. Once the subscriber for which the message is intended is identified, and the corresponding data base entries for the subscriber retrieved from the database 310, operation proceeds to step 510.

Detailed Description Text (50):
In step 510, a determination is made, e.g., from the data included in column 5 of the database 310, as to whether or not the NFA protocol is active at the C.O. switch for the identified subscriber for which the message is intended.

Detailed Description Text (55):
Step 514 involves updating of the database 310 to reflect changes in the status information associated with the identified subscriber. This involves, e.g., changing the NFA status information if it was activated in step 512, and updating the message waiting and message prompt information to reflect the waiting message. For example, the message waiting status information in col. 6 may be updated to reflect that there is an additional waiting message for the identified subscriber and the VMIP where the message is waiting. In addition, the message prompt information, included in database column 7, will be modified, if necessary, so that the identified subscriber will be informed of the waiting message upon connecting to the control IP.

Detailed Description Text (56):
Once the subscriber database is updated in step 514, operation returns to the monitoring step 504 wherein the control IP monitors for additional inputs. From step 504, operation proceeds to step 506.

Detailed Description Text (57):
If, in step 506, a subscriber connection signal is detected as a result of the monitoring for received signals which occurred in step 504, operation proceeds to step 520 via flow chart connectors 516, 518. The subscriber connection signal will normally include information sufficient to identify the subscriber for database access purposes, e.g., the subscriber's telephone number or account number information. For purposes of this exemplary discussion, the exemplary individual subscriber who established the connection to the IP will be referred to as "the connected subscriber".

Detailed Description Text (64):
If, in step 526 it is determined that there are new messages for the subscriber, operation proceeds to step 530. In step 530, the subscriber is notified of the presence of a waiting message, e.g., by playing the prompt indicated in the database 310 for the connected subscriber. From step 530 operation proceeds to step 531 wherein an inquiry is made as to whether or not the subscriber wants to retrieve the messages. The inquiry may involve playing of a message asking if the subscriber wants to retrieve the messages followed by monitoring of the call connection to detect a spoken YES or NO response.

Detailed Description Text (70):
Once a connection is established with one of the voice mail IPs 228, 230, the control IP 232 signals, in step 534, the C.O. switch 216 to take its digit receiver off-line. In step 536 voice dialing support is de-activated if it was enabled. Accordingly, by the end of step 536, the relatively expensive combined speaker independent and speaker dependent speech recognition circuit 408 used for voice dialing is released from servicing the connected subscriber. In addition, because the DTMF receiver of the central office switch is disable with regard to the connected subscriber, the connected subscriber is free to interact with the voice messaging IP through the use of DTMF or voice instructions without accidentally initiating a.telephone call.

Detailed Description Text (76):
The path beginning with step 548 may occur in parallel with the path beginning with step 542. In step 548 the connection between the subscriber and the voice mail IP 228, 230 is monitored for a voice mail IP connection termination control signal e.g. from the voice mail IP or subscriber. Operation progresses to step 550 when a termination signal is detected. In step 550 the connection between the subscriber and the voice mail IP 228, 230 is terminated. From step 550 operation proceeds to step 552 wherein the database 310 is updated to reflect the review of messages by the subscriber which were stored on the voice mail IP to which the subscriber was connected.

Detailed Description Text (78):
This is done by, e.g., checking the updated database entry for the connected subscriber indicating the message waiting status. For example, if the connected subscriber were Bob Barker, after connecting to the second voice mail IP 230, there would still be voice mail messages on first voice mail IP 228. However, if the connected subscriber were Mary Wells, there would be no additional messages waiting for the subscriber.

Detailed Description Text (82):
While not explicitly stated in the flow diagram of FIGS. 5A-5B it is to be understood that a connected subscriber can terminate the call at any time by hanging up. Hanging up causes the control IP 232 to terminate the subscriber's connection with any voice mail IP's which may exist at the time of call termination. In addition, the control IP 232 updates the database 232 to reflect the retrieval of messages prior to call termination if, in fact, any messages where retrieved.

CLAIMS:

8. The telephone system of claim 5, wherein the control peripheral device includes:

a speech recognizer circuit;

a subscriber database including information on voice mail services provided to the subscriber by the first and second service devices; and

an application processor coupled to the speech recognizer circuit and subscriber database.

15. The telephone system of claim 14, further comprising a database of subscriber information including information about messages waiting for the subscriber on either of the first and second service peripheral devices.

18. A method of operating a telephone system including a telephone corresponding to a subscriber, a service peripheral device, and a switch capable of automatically connecting the telephone to at least one peripheral device in response to an off-hook condition of the telephone, the method comprising the steps of:

detecting when a message is waiting for the telephone subscriber at the service peripheral device;

monitoring to detect an off-hook condition of the telephone; and

in response to detecting a waiting message for the subscriber and a telephone off-hook condition, automatically connecting the subscriber to the service peripheral service device.

26. The method of claim 18, wherein the plurality of service peripheral devices are voice mail peripheral devices, the method further comprising the step of:

operating the control peripheral device to:

i. identify at least one of the plurality of voice mail peripheral devices that has a waiting message for the subscriber; and

ii. selecting the identified one of the plurality of voice mail peripheral devices as the one of the plurality of peripheral devices to which the telephone is connected upon connection of the telephone to the control peripheral device.

27. The method of claim 26, further comprising the step of:

operating the control peripheral device to detect when a subscriber has been connected to a peripheral device where a stored message for the subscriber was detected; and

in response to detecting that a subscriber has been connected to a peripheral device where a stored message for the subscriber was detected, signaling the switch to disable the automatic peripheral device connection feature.

30. The method of claim 29, further comprising the step of:

detecting when one of the plurality of service peripheral devices has a stored message for the subscriber; and

signaling the switch to enable the automatic peripheral device connection feature when a stored message for the subscriber is detected.

Previous Doc Next Doc Go to Doc#

US006141663A

United States Patent [19]

Hunkins et al.

[11] Patent Number: 6,141,663

[45] Date of Patent: Oct. 31, 2000

[54] **AUTOMATIC EXTERNAL DATA SYNCHRONIZATION METHOD**

[75] Inventors: **Andrew D. Hunkins**, Plymouth; **Brian R. Stromquist**, Minneapolis, both of Minn.

[73] Assignee: **Unimax Systems Corporation**, Minneapolis, Minn.

[21] Appl. No.: **08/210,320**

[22] Filed: **Mar. 18, 1994**

[51] **Int. Cl.**[7] **G06F 12/00**

[52] **U.S. Cl.** **707/201**; 395/600

[58] **Field of Search** 395/600; 707/201

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,714,995	12/1987	Materna et al.	707/201
5,278,978	1/1994	Demers et al.	395/600
5,345,586	9/1994	Hamala et al.	395/650
5,353,401	10/1994	Iizawa et al.	395/161
5,369,778	11/1994	San Soucie et al.	395/800
5,403,639	4/1995	Belsan et al.	395/600
5,410,675	4/1995	Shreve et al.	395/500
5,416,917	5/1995	Adair et al.	395/500
5,978,811	11/1999	Smiley	707/103

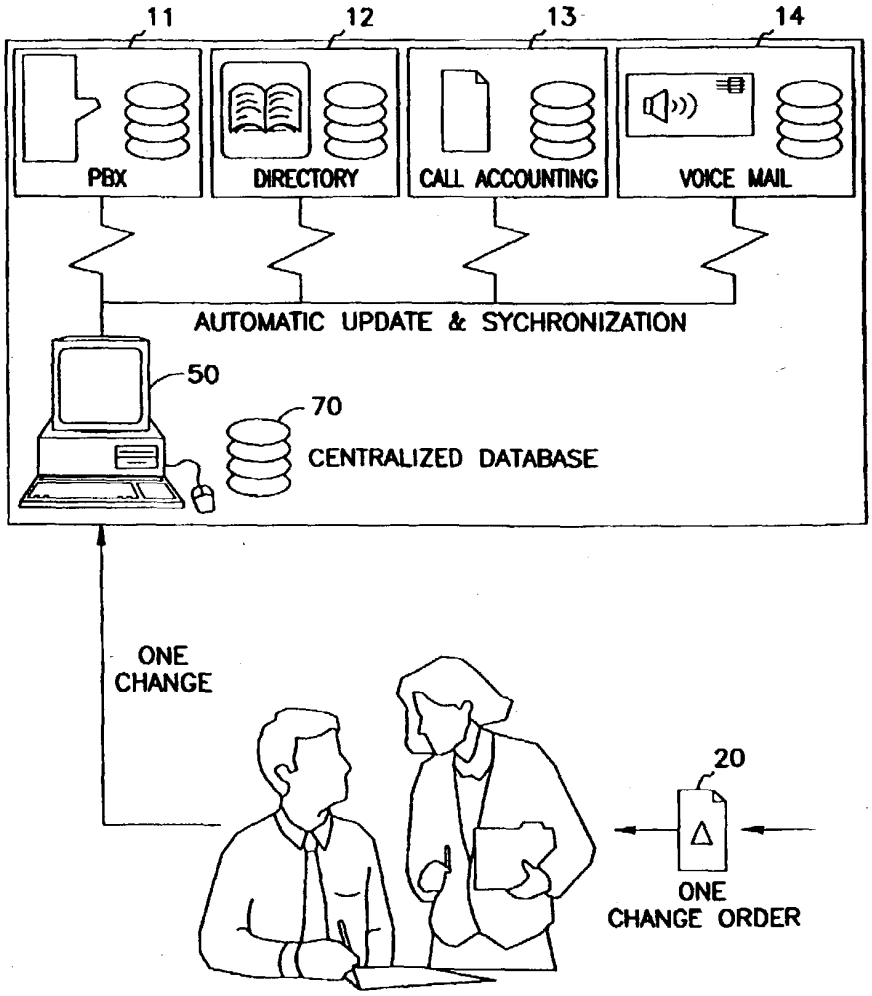
Primary Examiner—Wayne Amsbury

Attorney, Agent, or Firm—Schwegman, Lundberg, Woessner & Kluth, P.A.

[57] **ABSTRACT**

Data integrity between multiple databases with redundant data fields is enhanced by a synchronization method which adapts to unspecified database formats by a flexible format definition, identification of a data origin and identification of data targets to significantly improve data integrity and update efficiency in legacy database systems.

6 Claims, 6 Drawing Sheets



L18: Entry 13 of 29 File: USPT Jan 20, 2004

DOCUMENT-IDENTIFIER: US 6681257 B1
TITLE: Methods and system for determining message routing based on elements of a directory number

Abstract Text (1):
Methods and systems in a messaging system to identify a messaging platform for use in delivery of a message addressed to a mailbox address served by the messaging platform. The messaging system includes a network element and a plurality of directories. Using at least the NPA of the mailbox address, the network element determines which directory includes the indicator for the messaging platform for delivery of the message. Using at least the NPA-NXX of the mailbox address, the directory obtains and provides the indicator of the messaging platform for delivery of the message.

Brief Summary Text (5):
Generally, an RWM system includes a directory to provide information with respect to the routing of a message between or among the messaging platforms of the RWM system. Such a directory typically includes a record or an entry for each subscriber of the RWM system. Generally, a subscriber's, record may include information about the subscriber in the fields of the record. For example, a subscriber's record may include his or her mailbox address. A mailbox address may be, may be composed of, or may include a directory number or other identifier such as the subscriber's name, address, and/or personal identification number (PIN), or other code. In addition, the subscriber's record includes a field with an address for the messaging platform serving the mailbox of the subscriber. With the information from this record, the directory may provide information with respect to the routing of a message addressed to the subscriber's mailbox address.

Brief Summary Text (6):
For example, assume a subscriber ("messaging subscriber") creates a message at a first messaging platform (VMS#1). Also assume the subscriber desires the, message to be transmitted so the message is made available for retrieval by a recipient ("receiving subscriber") from his or her mailbox. The message created by the subscriber typically includes the mailbox address of the recipient. But the message, as created by the subscriber, typically does not include the address of the messaging platform serving the recipient (VMS#2). To obtain the address of VMS#2, VMS#1 provides the directory with the mailbox address of the message. In response, the directory provides VMS#1 with the address of VMS#2. VMS#1 then uses the address to route the message to VMS#2 where VMS#2 makes the message available in the recipient's mailbox.

Brief Summary Text (11):
When making a determination as to the organizational scheme for records to be included in the directories of the RWM system, the dynamic nature of messaging systems must be taken into account. For example, the respective assignment of subscribers to messaging platforms may change over time in efforts to load balance the overall RWM system. As another example, the respective assignment of subscribers to messaging platforms may change over time based on movement or other changes instituted by the subscriber. To explain, consider a subscriber who moves from one geographic area of the RWM system to another. With local number

portability (LNP), the subscriber may retain his or her directory number, but be served by a different messaging platform of the RWM system. In the case of a subscriber's mailbox being moved from a messaging platform to a different messaging platform, the record for the subscriber in the directory needs to reflect the change in messaging platform address so that messages for the subscriber are routed correctly and efficiently to the different messaging platform.

Brief Summary Text (18):
Generally stated, the present inventions relate to systems and methods for routing of a message from a subscriber to a recipient in a messaging system. Exemplary embodiments of the present inventions include a plurality of directories and a network element. Each directory includes a file containing subscriber records. Each record contains fields correlating at least a portion of a subscriber's mailbox address to the messaging platform serving the subscriber. The network element also includes a file. But the network element's file is used to determine which directory of the plurality of directories includes records with fields containing data about the messaging platform serving a group of subscribers including a particular subscriber. Data about the messaging platform of a recipient of a message is obtained in a two-action process: (1) the network element is consulted to obtain the identity of the appropriate directory to consult; and (2) the directory (identified by the network element) is consulted to obtain an indicator of the messaging platform serving the recipient of the message.

Brief Summary Text (28):
In response to the query, the directory 42 uses at least part of the calling line number of the mailbox address of the recipient to find a record including an indicator for the address of the messaging platform serving the recipient. The directory provides the indicator or other information related to the messaging platform serving the messaging subscriber.

Brief Summary Text (29):
In response to receiving the response from the directory, the messaging platform serving the messaging subscriber uses the indicator to transmit the message to the messaging platform serving the recipient. The messaging platform serving the recipient saves the message as appropriate in association with the mailbox for the recipient so that the message may be retrieved by the recipient.

Detailed Description Text (5):
The RWM system described herein allows a subscriber to the messaging system within the region of the service provider to send, receive, forward, and reply to messages, including voice mail messages, faxes, Internet data (including voice-over-Internet messages), and other electronic data. Subscribers may receive messages from other subscribers and non-subscribers. Subscriber-to-subscriber messaging, however, illustrates the advanced features of the RWM system such as: (1) each subscriber may send a message to another subscriber; (2) each subscriber may reply to a message received from another subscriber; (3) each subscriber may reply to a telephone message received from a non-subscriber by implementing a feature that dials the non-subscriber; and (4) each subscriber may receive and reply to Internet voice messages or fax messages.

Detailed Description Text (10):
SSPs 12a, 12b, 12c are interconnected by a plurality of trunk circuits 18. These are the voice path trunks that connect the SSPs to connect communications. Each of the SSPs is connected to another type of AIN element referred to as a local signal transfer point (STP) 20 via respective data links. Currently, these data links employ a signaling protocol referred to as Signaling System 7 (SS7). Much of the intelligence of the AIN resides in yet another type of element referred to as a service control point (SCP) 22 that is connected to STP 20 over an SS7 data link. Among the functions performed by the SCP 22 is the maintenance of network databases and subscriber databases as represented collectively by databases (subscriber data)

24.

Detailed Description Text (12):
When a messaging subscriber (such as the person or entity using telephone 14) subscribes to a messaging service, an entry or a record is created in a VMS such as VMS 15. Each VMS 15, 17 includes subscriber administration, message retrieval, send, reply, forward, and mailbox maintenance functions, among others. Each VMS 15, 17 includes or is functionally connected respectively to a subscriber profile database 28, 30 (subscriber data). Each subscriber profile database stores subscriber-specific profile information (subscriber information) for retrieval by VMS functions. The VMS 15,17 are elements of the messaging system or service. To the protected TCP/IP network(s) 32 described below, the messaging platform looks like a valid electronic mail (e-mail) destination. In support of this, the VMS 15, 17 may be assigned a TCP/IP (or IP) address and/or a domain name. Generally, the IP or other address or domain name of the VMS 15, 17 may be stored in a region-wide messaging directory (RMD) 40, 42 discussed below, or may be stored on some domain name server (not illustrated) in the protected TCP/IP network(s) 32, or some other element. In further support of this TCP/IP capability, the VMS 15, 17 may also provide operations access to, two standard Internet mail administrative destinations, in addition to subscriber messaging mailbox destinations. These destinations may include 404@rwm.bellsouth.com. In addition, each VMS is an SS7 network element and as such is assigned a destination point code (DPC).

Detailed Description Text (13):
The VMS 15, 17 communicates with the SSP and the SCP according to the AIN 0.2 Switch--Intelligent Peripheral Interface Generic Requirements--1129-CORE Specification, AINGR: Switch--Intelligent Peripheral Interface (IPI) (A module of AINGR, FR-15); Document Number: GR-1129; Issue Number: 03; Updates: REV01--October 1998; Issue Date: September 1997; Product Type: Industry Requirements and Standards (RS); Component of FR-15, which is incorporated herein by reference. This 1129 Spec describes the use of a Remote Operations parameter for indicating the invocation of a supplementary service. The service is identified by an operation value. The Remote Operations Parameter may be used to allow the SCP and the VMS to share information regarding a subscriber to the messaging service.

Detailed Description Text (16):
Advantageously, a subscriber's line number generally is the subscriber's mailbox number associated with a messaging platform rendering service to the subscriber in the RWM system. In other words, a message addressed to the subscriber includes the subscriber's line number which is also the subscriber's mailbox number. In particular, the subscriber's address may be based on the ten digit directory number (DN) using an International Telecommunications Union (ITV) Standard E.164 compliant address. The following syntax may be used for the subscriber's address: {+}{1}{DN}[+]{0}{SubMailbox}.

Detailed Description Text (34):
As noted, the organizational scheme of the directories and the network element is based on the left-to-right hierarchy of the elements of the NPA-NXX-XXXX of a line number. As also noted, the line number of a subscriber is used in the exemplary embodiments as the mailbox address of the subscriber. Thus, the organizational scheme of the present inventions is based on the hierarchy of the elements of the NPA-NXX-XXXX as the mailbox address of a subscriber. Advantageously, such organization avoids the necessity of having a record for each subscriber or mailbox number of the system.

Detailed Description Text (44):
FIGS. 2A and 2B are used to further explain the organizational scheme as used by the directories and the network element and the use of the left-to-right hierarchy of a line number. Referring to FIG. 2A, pursuant to this scheme, a. directory 40 may be or may include a file 44 (also referred to as data or data of the directory

in this example). The file 44 includes records 46A-46N. Each record 46A-46N includes at least two corresponding fields (also referred to as parts or elements): (1) a mailbox address field 48A-48N (MA field); and (2) a messaging platform field 50A-50N (MP field).

Detailed Description Text (52):
Exemplary Methods & Systems to Obtain an Address of a Messaging Platform for Use in Delivery of Message Addressed to a Mailbox Address--FIG. 3

Detailed Description Text (55):
For this example, assume a first directory (RMD #1) 40 serves six groups of line numbers. Each group is represented in the file (also referred to herein as the data or the data of the directory) of the directory 40 with a respective record 60A-60F. Each record includes two corresponding fields: the mailbox address field (MA field); and the messaging platform field (MP field). The MP field includes an indicator for the messaging platform serving the line numbers of the group.

Detailed Description Text (70):
To pause briefly in the description of FIG. 3, it is noted that the left-to-right hierarchy of a line number is advantageously used in the exemplary embodiments as the organizational scheme for directories for several reasons. An important reason is that typically line numbers having common NPA-NXXs and sometimes even having common NPA-NXX-Xranges may be served by the same messaging platform. For example, all of the mailbox addresses (line numbers) having in common (770) 925 as a designated hierarchy are served by VMS #217 in FIG. 3. The inventors have discovered that an efficient use may be made of the capacity of a directory by having only a single record corresponding to this designated hierarchy. In other words, all of the mailbox numbers having (770) 925 as an NPA-NXX are served by the same messaging platform, and therefore, a directory that provides information as to the address of the messaging platform serving a mailbox having (770) 925 as its NPA-NXX in its mailbox address need not include a record for every active line number having (770) 925 in its mailbox address. Rather, a single record including only the common (770) 925 covers all of the active mailbox addresses having the designated hierarchy of 770 925.

Detailed Description Text (72):
Referring again to FIG. 3, assume that network element 51 is used to keep track of and provide information as to which directory (as between directory 40 and directory 42) is to be consulted to obtain an indicator or other address of a messaging platform serving a line number. To carry out its operations, the network element 51 includes a file 52 (referred to herein as information or information of the network element) with records (referred to herein as super-records or supergroup records). Each super-record in the network element 51 corresponds to a respective supergroup of mailboxes. A supergroup of mailboxes is defined by each mailbox of the supergroup having a common NPA (or other more common elements such as NPA-NXX) in its mailbox address. As illustrated in FIG. 3, there are two supergroups of mailboxes served by the system 10, to-wit: supergroup (404) wherein each mailbox has (404) as the common NPA; and supergroup (770) wherein each mailbox has (770) as the common NPA. In other words, the network element 51 keeps track of which directory as between RMD #140 and RMD #242 keeps track or corresponds to which supergroup of mailboxes ((404) or (770)).

Detailed Description Text (77):
To further explain the exemplary interaction of the network element 51 and the directories 40, 42 in a messaging system pursuant to the exemplary embodiments of the present inventions, assume a messaging subscriber 14 desires to make a message available for retrieval by a recipient 38. In this example, the recipient's line number and mailbox address is (770) 925-7666. The messaging subscriber creates a message for the recipient and provides the recipient's mailbox address ((770) 925-7666) through interaction with the VMS #115 serving the messaging subscriber 14

(see arrow 1).

Detailed Description Text (78):
To obtain information as to where to send the message so that it is available for retrieval by the recipient 38, the VMS #115 queries the network element 51 (see arrow 2). The query includes at least the NPA of the line number and mailbox address of the recipient. The VMS #115 is seeking an indicator or other address for the messaging platform serving the recipient 38. But the first action in obtaining such an indicator is to find which directory in the messaging system has information on the indicator. The network element 51 looks for the appropriate identifier, and if found, provides the VMS #1 with the information related to the directory.

Detailed Description Text (79):
In particular, the network element 51 uses the NPA of the mailbox address of (770) 925-7666 to find a directory (or an identifier for the directory) including the indicator for the messaging platform for. delivery of the message. In this example, the network element 51 uses the (770) of the mailbox address to find record 64B, which includes (770) in the address field. This record 64A includes a directory field corresponding to the address field. The directory field includes the identifier for the directory (RMD #242) serving the particular group of mailboxes including the recipient's mailbox. The network element 51 then responds to the VMS #1 with the identifier or other information for the directory (RMD #242) (see arrow 3).

Detailed Description Text (80):
The VMS #115 is provided with the identifier or other information for the directory including the indicator for the messaging platform for delivery of the message. The VMS #1 then uses the identifier or other information to query the directory (RMD #242) for the indicator or other information of the messaging platform (see arrow 4). The query includes at least the NPA-NXX of the line number and mailbox address of the recipient. The directory 42 uses the NPA-NXX of the mailbox address of (770) 925-7666 to find a record including the indicator for the messaging platform for the delivery of the message. In this example, the directory 42 uses the (770) 925 of the mailbox address to find record 62C, which includes (770) 925 in the MA field of the record. This record 62C includes an MP field corresponding to the MA field. The MP field includes the indicator for the messaging platform (VMS #217) serving the particular group of mailboxes including the recipient's mailbox. The directory 42 then responds to the VMS #115 with the indicator or other information related to the messaging platform (VMS #217) (see arrow 5).

Detailed Description Text (81):
The VMS #115 is provided with the indicator or other information for the messaging platform for delivery of the message. The VMS #1 uses the indicator or other information to transmit the message to VMS #217 (see arrow 6). The VMS #217 stores the message as appropriate in association with the mailbox for (770) 925-7666 from where the message may be retrieved by the recipient 38 (see arrow 7).

Detailed Description Paragraph Table (1):
Description/Directory Field LDAP DN Attribute Subscriber's Mailbox Number CN (Common Name) Name Announcement Spoken Name MDSBlocking N/A

CLAIMS:

1. In a messaging system including a plurality of messaging platforms, a system for keeping track of a correlation between a messaging platform and a group of mailboxes served by the messaging platform, each mailbox having a mailbox address including a line number as part of the mailbox address, the line number including an NPA-NXX, the system comprising: A. a plurality of directories for keeping track of which messaging platform of the plurality of messaging platforms serves which

group of mailboxes of a plurality of groups of mailboxes, a group of mailboxes being defined by each mailbox of the group having a common NPA-NXX in its mailbox address, each directory including records, each record corresponding to a respective group of mailboxes, and each record including a mailbox address field (MA filed) correlated to a messaging platform field (MP field), 1. the MA field including the common NPA-NXX of the respective group of mailboxes, and 2. the MP field including an indicator of a messaging platform serving the respective group of mailboxes; and B. a network element for keeping track of which directory of the plurality of directories corresponding to which supergroup of mailboxes of a plurality of supergroups, a supergroup of mailboxes being defined by each mailbox of the supergroup having a common NPA in its mailbox address, the network element including supergroup records, each supergroup record corresponding to a respective supergroup of mailboxes, and each supergroup record including an address field correlated to a directory field, 1. the address field including the common NPA of the respective supergroup of mailboxes, and 2. the directory field including an identification of a directory of the plurality of directories.

2. The system of claim 1, wherein the group of mailboxes is further defined by, each mailbox of the group having a common NPA-NXX-Xrange in its mailbox address; wherein the MA field comprises the common NPA-NXX-Xrange of the respective group of mailboxes; wherein the supergroup of mailboxes is further defined by each mailbox of the supergroup having a common NPA-NXX in its mailbox address; wherein the address field comprises the common NPA-NXX of the respective supergroup of mailboxes; and wherein the supergroup record is associated with the respective supergroup of mailboxes by inclusion of the common NPA-NXX of the respective supergroup of mailboxes in the common NPA-NXX-Xrange of the address field of the supergroup record.

6. In a messaging system including a plurality of messaging platforms serving mailboxes, each mailbox having a mailbox address including a line number as part of the mailbox address, the calling line number including an NPA-NXX, a method for obtaining a particular indicator of a particular messaging platform serving a recipient mailbox of a recipient with respect to a message addressed to a recipient mailbox address of the recipient mailbox, the method comprising: A. causing the messaging system to include a plurality of directories for keeping track of which messaging platform of the plurality of messaging platforms serves which group of mailboxes of a plurality of groups of mailboxes, a group of mailboxes being defined by each mailbox of the group having a common NPA-NXX in its mailbox address, each directory including records, each record corresponding to a respective group of mailboxes, and each record including a mailbox address field (MA field) correlated to a messaging platform field (MP field), 1. the MA field including the common NPA-NXX of the respective group of mailboxes, and 2. the MP field including an indicator of a messaging platform serving the respective group of mailboxes; and B. causing the messaging system to include a network element for keeping track of which directory of the plurality of directories corresponds to which supergroup of mailboxes of a plurality of supergroups of mailboxes, a supergroup of mailboxes being defined by each mailbox of the supergroup having a common NPA in its mailbox address, the network element including supergroup records, each supergroup record corresponding to a respective supergroup of mailboxes, and each supergroup record including an address field correlated to a directory field, 1. the address field including the common NPA of the respective supergroup of mailboxes, and 2. the directory field including an identification of a directory of the plurality of directories; C. with respect to the recipient mailbox address of the message, obtaining from the network element an identifier of a particular directory of the plurality of directories, the particular directory including a particular record corresponding to a particular group of mailboxes, the particular group of mailboxes including the recipient mailbox on the basis of the recipient mailbox address including a particular common NPA-NXX of the particular group of mailboxes; and D. using the identifier of the recipient directory to obtain from the recipient directory the particular indicator of the recipient messaging platform serving the

particular group of mailboxes including the recipient mailbox.

7. The method of claim 6, wherein action C comprises obtaining from the network element the identifier of the particular directory of the plurality of directories by using an NPA of the recipient mailbox address to find a particular supergroup record in the network element including a particular address field including the NPA of the recipient mailbox address and correlated to a particular directory field including the identifier of the particular directory.

8. The method of claim 6, wherein action D comprises obtaining from the recipient directory the particular indicator of the recipient messaging platform by using an NPA-NXX of the recipient mailbox address to find a particular record in the recipient directory including a particular MA field including the NPA-NXX of the recipient mailbox address and correlated to a particular MP field including the particular indicator of the recipient messaging platform.

9. In a messaging system including a plurality of messaging platforms serving respective mailboxes, a method for obtaining an indicator for a messaging platform for delivery of a message addressed to a mailbox address, the messaging platform serving the mailbox address, and the mailbox address including a line number including a full exchange designation (NPA-NXX) including an NPA, the method comprising: A. using the NPA of the mailbox address to find a directory of a plurality of directories, the directory including the indicator for the messaging platform for delivery of the message; and B. using the full exchange designation of the mailbox address to obtain the indicator for the messaging platform from the directory of the plurality of directories.

10. The method of claim 9, further comprising: C. using the indicator of the messaging platform obtained from the directory to route the message to the messaging platform for delivery of the message addressed to the mailbox address.

11. The method of claim 9, wherein action A comprises using the NPA of the mailbox address by comparing the NPA to information stored in a network element for a matching NPA in the information, the matching NPA corresponding to a matching directory identifier identifying the directory of the plurality of directories including the indicator of the messaging platform for delivery of the message addressed to the mailbox address.

12. The method of claim 9, wherein action B comprises using the full exchange designation for the mailbox address by comparing the full exchange designation to data stored in the directory for a matching full exchange designation in the data, the matching full exchange designation corresponding to a matching indicator indicating the messaging platform for delivery of the message addressed to the mailbox address.

13. In a messaging system including a plurality of messaging platforms serving mailboxes, a system to allow an address of a messaging platform to be obtained for use in delivery of a message addressed to a mailbox address, the mailbox address including a line number including full exchange designation having an NPA, the system comprising: A. a network element functionally connected to the plurality of messaging platforms and operative based on the NPA of the mailbox address to find a directory of a plurality of directories, the directory including the indicator for the messaging platform for delivery of the message; and B. the directory of the plurality of directories being functionally connected to the plurality of messaging platforms and operative using the full exchange designation to obtain the indicator of the messaging platform.

14. The system of claim 13, wherein the network element comprises information; and wherein the network element is operative to use the NPA of the mailbox address by comparing the NPA to information stored in the network element for a matching NPA

in the information, the matching NPA corresponding to a matching directory identifier identifying the directory of the plurality of directories including the indicator of the messaging platform for delivery of the message addressed to the mailbox address.

15. The system of claim 13, wherein the directory of the plurality of directories comprises data; and wherein the directory of the plurality of directories is operative to use the full exchange designation of the mailbox address by comparing the full exchange designation to the data stored in the directory for a matching full exchange designation in the data, the matching full exchange designation corresponding to a matching indicator indicating the messaging platform for delivery of the message addressed to the mailbox address.

Previous Doc Next Doc Go to Doc#

US006681257B1

(12) **United States Patent**
Patel et al.

(10) **Patent No.: US 6,681,257 B1**
(45) **Date of Patent: Jan. 20, 2004**

(54) **METHODS AND SYSTEM FOR DETERMINING MESSAGE ROUTING BASED ON ELEMENTS OF A DIRECTORY NUMBER**

(75) Inventors: **Navneet Patel**, Marietta, GA (US); **James Carlton Bedingfield**, Lilburn, GA (US)

(73) Assignee: **BellSouth Intellectual Property Corporation**, Wilmington, DE (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/459,498**

(22) Filed: **Dec. 13, 1999**

Related U.S. Application Data

(60) Provisional application No. 60/121,892, filed on Feb. 26, 1999.

(51) **Int. Cl.**[7] **G06F 15/16**

(52) **U.S. Cl.** **709/245**; 379/88.13; 379/88.14; 379/88.18; 379/88.22; 707/2

(58) **Field of Search** 709/245, 244, 709/206, 217; 379/88, 88.18

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,930,152	A		5/1990	Miller
4,933,967	A		6/1990	Lo et al.
5,058,152	A		10/1991	Solomon et al.
5,353,331	A		10/1994	Emery et al.
5,361,295	A		11/1994	Solomon et al.
5,425,091	A		6/1995	Josephs
5,493,607	A	*	2/1996	Arumainayagam et al. . 379/269
5,521,969	A		5/1996	Paulus et al.
5,572,583	A		11/1996	Wheeler, Jr. et al.
5,680,442	A		10/1997	Bartholomew et al.
5,684,862	A		11/1997	Finnigan
5,692,033	A		11/1997	Farris
5,712,903	A		1/1998	Bartholomew et al.
5,717,742	A	*	2/1998	Hyde-Thomson 379/88.17

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

EP	0 255 325	2/1988
EP	0 412 799	2/1991
EP	0 507 125	10/1992
EP	0 543 235	5/1993
EP	0 624 967	11/1994
EP	0 662 762	7/1995
EP	0782304 A2	7/1997
EP	0782315 A2	7/1997
EP	0782316 A2	7/1997
EP	0813162 A2	12/1997
EP	0825752 A2	2/1998
EP	0841796 A2	5/1998
EP	0843453 A2	5/1998
EP	0886228 A2	12/1998
EP	0841796 A3	8/1999
WO	97/08901	3/1997

OTHER PUBLICATIONS

"An Enhanced Message Networking Topology: Multimedia Messaging with the Intuity™ Interchange Server," Bell Labs Technical Journal, Apr.–Jun. 1998, pp 124–135.
Search Report PCT/US/05002.

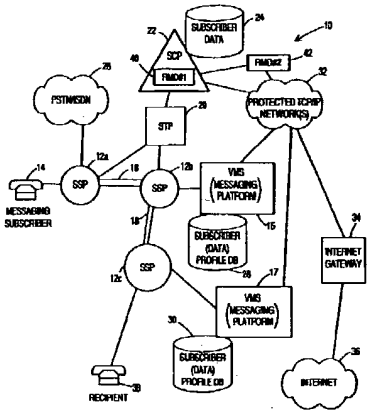
(List continued on next page.)

Primary Examiner—Ayaz Sheikh
Assistant Examiner—Syed A. Zia
(74) *Attorney, Agent, or Firm*—Nora M. Tocups

(57) **ABSTRACT**

Methods and systems in a messaging system to identify a messaging platform for use in delivery of a message addressed to a mailbox address served by the messaging platform. The messaging system includes a network element and a plurality of directories. Using at least the NPA of the mailbox address, the network element determines which directory includes the indicator for the messaging platform for delivery of the message. Using at least the NPA-NXX of the mailbox address, the directory obtains and provides the indicator of the messaging platform for delivery of the message.

15 Claims, 3 Drawing Sheets



09/826,121